A.D. 1873, 10th January. Nº 154.

SPECIFICATION

OF

HENRY YOUNG DARRACOTT SCOTT.

TREATING SEWAGE.

LONDON:
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1873.

A.D. 1873, 14*th* January. N° 154.

Treating Sewage.

LETTERS PATENT to Henry Young Darracott Scott, of Ealing, in the County of Middlesex, Major-General, C.B., for the Invention of "Improvements in the Treatment of Sewage and of the Deposits Obtained therefrom."

Sealed the 8th July 1873, and dated the 14th January 1873.

PROVISIONAL SPECIFICATION left by the said Henry Young Darracott Scott at the Office of the Commissioners of Patents, with his Petition, on the 14th January 1873.

I, Henry Young Darracott Scott, of Ealing, in the County of Middlesex, Major-General, C.B., do hereby declare the nature of the said Invention for "Improvements in the Treatment of Sewage and of the Deposits Obtained therefrom," to be as follows:—

The object of this Invention is the purification of sewage water and the preparation therefrom of marketable substances which may be used in the arts for various purposes, such as purifying gas, disinfecting, decolorising liquids, grinding, polishing, and painting.

For carrying out my Invention I precipitate the sewage water to be operated upon with quicklime in excess in tank No. 1, the lime being added in any convenient manner. The precipitate thus produced is allowed to subside, and to the effluent therefrom I add soluble salts of cheap metallic oxides, such as the oxides of iron or alumina, or alumina and iron mixed, or zinc, in sufficient quantity to precipitate in tanks No. 2 the bases of such salts by the greater affinity of the free lime present in the sewage water for their acids.

The precipitate in tank No. 1, which contains the mineral and organic substances in suspension in the sewage water, together with some of the organic and other matters which were in solution in it, may be converted into agricultural lime or cement or into charcoal, which may be applied in the final purification of the sewage water or for other purposes, according to well known methods.

The precipitate in tank No. 2, which will consist of the oxides of the metals of the salts used as precipitants, together with suitable quantities of organic matter, may by calcination be converted into valuable products. When for instance a salt of iron is used as the precipitant the product will be coleothan; when the precipitant is prepared by digesting impure clay in sulphuric acid the product will be emery powder; or again when a salt of zinc is used, zinc, white or grey, and putty powder. Again by merely distilling these deposits without complete calcination the above substances mingled with carbon will be obtained, which may be applied to many useful purposes as charcoal and polishing powder.

The sewage water from tank No. 2 will be sufficiently pure to run into large streams, or I may filter it through the charcoal prepared from the deposit in tank No. 1, when it will be so far purified as to enable it to be run without any danger into small streams.

In some cases, when the trade of the town is one of working in metals, salts of iron may find their way into the sewers, as at Birmingham, and entirely change the character of the sewage during the working hours. In these cases the addition of the lime precipitates the oxides of such salts from solution in tank No. 1, and the deposit during working hours will consist chiefly of such oxides and of clay and siliceous matters. This precipitate may be separated by dividing the tank into compartments to retain more or less fine particles, which by calcination or distillation may be converted into substances suitable for various purposes, such as disinfection and grinding or polishing.

For cases in which the produce from tank No. 2 can find no ready sale I may subject the deposit to sufficient heat to destroy the organic matter, dissolve it in hydrochloric or sulphuric acid, and re-use the salt for precipitating in the said tank a fresh quantity of sewage.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Henry Young Darracott Scott in the Great Seal Patent Office on the 14th July 1873.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, HENRY YOUNG DARRACOTT SCOTT, of Ealing, in the County of Middlesex, Major-General, C.B., send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fourteenth day of January, in the year of our Lord One thousand eight hundred and seventy-three, in the thirty-sixth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Henry Young Darracott Scott, Her special licence that I, the said Henry Young Darracott Scott, my executors, administrators, and assigns, or such others as I, the said Henry Young Darracott Scott, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN THE TREATMENT OF SEWAGE AND OF THE DEPOSITS OBTAINED THEREFROM," upon the condition (amongst others) that I, the said Henry Young Darracott Scott, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Henry Young Darracott Scott, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement (that is to say) :—

The object of this Invention is the purification of sewage water and the preparation therefrom of marketable substances which may be used in the arts for various purposes, such as purifying gas, disinfecting, decolorizing liquids, grinding, polishing, and painting.

In carrying out my Invention I precipitate the sewage water to be operated upon with quicklime in excess in tank No. 1, the lime being added in any convenient manner. The precipitate thus produced is allowed to subside, and to the effluent therefrom containing a large excess of lime in solution I add such a proportion of soluble salts of cheap metallic oxides (such as the oxides of iron or alumina, or alumina and iron mixed, or zinc) as will be precipitated by the excess of lime present in the sewage. The precipitate thus obtained in tank No. 2 is produced by the greater affinity of the free lime present in the sewage water for the acids of such metallic salts.

The precipitate in tank No. 1, which contains the mineral and organic substances in suspension in the sewage water, together with some of the organic and other matters which were in solution in it, may be converted into agricultural lime or cement, or into charcoal, which may be applied in the final purification of the sewage water or for other purposes according to well known methods.

The precipitate in tank No. 2, which will consist of the oxides of the metals of the salts used as precipitants, together with notable quantities of organic matter, may by calcination be converted into the valuable products herein-after mentioned. When for instance a salt of iron is used as the precipitant the product will be colcothar; when the precipitant is prepared by digesting impure ferruginous clays in sulphuric acid the product will be emery powder; or again when a salt of zinc is used, zinc, white or gray, and tutty powder will be obtained. Again by merely distilling these deposits without complete calcination the above substances mingled with carbon will be obtained, which may be applied to many useful purposes, as for instance charcoal, polishing powder, &c.

When the precipitate is obtained in tank No. 2, the effluent sewage water will be sufficiently pure to run into large streams, or I may filter it through the charcoal prepared from the deposit in tank No. 1, when it will be so far purified as to enable it to be run without any danger into small streams.

In some cases, when the trade of the town is one of working in metals, salts of iron, &c. may find their way into the sewers, as at Birmingham, and will entirely change the character of the sewage during the working hours. In these cases the addition of the lime precipitates the oxides of such salts from solution in tank No. 1, and the deposit during working hours will consist chiefly of such oxides and of clay and siliceous matters. This precipitate may be separated by dividing the tank into compartments to retain more or less fine particles, which by calcination or distillation may be converted into substances suitable for various purposes, such as disinfection, purifying gas, and grinding or polishing powders.

In cases in which the product from tank No. 2 can find no ready sale I may subject the deposit to sufficient heat to destroy the organic matter, then dissolve the residuum in hydrochloric or sulphuric acid, and re-use the salt for precipitating a fresh quantity of sewage in the said tank.

Having now described my Invention of "Improvements in the Treatment of Sewage and of the Deposits Obtained therefrom," and having explained the manner of carrying the same into effect, I claim as the Invention secured to me by Letters Patent as aforesaid, treating sewage and sewage deposits by precipitating the suspended mineral and organic matters by means of lime used in excess, and then adding to the effluent water solutions of metallic salts in order that the lime in the effluent water may decompose the metallic salts, and thus throw down their bases in a finely divided state, which precipitates when dried and pulverized will produce metallic oxides uncontaminated with the mineral and organic matters originally held in suspension in the sewage.

In witness whereof, I, the said Henry Young Darracott Scott, have hereunto set my hand and seal, the Fourteenth day of July, in the year of our Lord One thousand eight hundred and seventy-three.

HENRY Y. D. SCOTT. (L.S.)

LONDON:
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